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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/863,399      | 05/24/2001  | Sung Woong Moon      | 8733.440.00         | 9194             |

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EXAMINER

DI GRAZIO, JEANNE A

ART UNIT PAPER NUMBER

2871

DATE MAILED: 11/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/863,399

Applicant(s)

MOON ET AL.

Examiner

Jeanne A. Di Grazio

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4. 6) ☐ Other:

## DETAILED ACTION

### *Priority*

Priority is claimed to Korean Patent Application No. 2000-28072 of May 24, 2000.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (USPN 6,456,353 B1) in view of Taguchi (USPN 5,949,512).

Per claims 1-6:

1. A tape carrier package that is bonded onto a liquid crystal display panel, comprising:  
a pad part being provided with a plurality of pads bonded to pads of the liquid crystal display panel and divided into at least two parts.
2. The tape carrier package according to claim 1, wherein the pad part is divided with having a desired width of slit therebetween.
3. The tape carrier package according to claim 2, wherein the slit is mounted with an integrated circuit and formed by removing one side of a base film provided with the pad part.
4. The tape carrier package according to claim 1, wherein the slit is positioned at the center of the upper portion of the base film opposed to the pads of the liquid crystal display panel.
5. The tape carrier package according to claim 1, further comprising: a printed circuit board mounted with circuits generating driving signals for driving the liquid crystal display panel, wherein said tape carrier package is bonded in a bent state between the liquid crystal display panel and the printed circuit board.
6. The tape carrier package according to claim 1, further comprising a

printed circuit board mounted with circuits generating driving signals for driving the liquid crystal display panel, wherein an output pad of the tape carrier package is bonded in a plane state between the liquid crystal display panel and the printed circuit board.

Discussion: Chen has a flexible base film and a plurality of ICs wherein said ICs have a plurality of pads for electrical connection to the flexible base film [Col. 3, Lines 5-7]. The connection of the driver ICs to the flexible base film is accomplished through tape automated bonding [Col. 3, Lines 64-67 and Col. 4, Line 1]. Chen does not appear to have a pad part divided into at least two parts; however, Taguchi does have a TCP with a base film that has an aperture region that divides the film into two regions [Figure 1(a)]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chen in view of Taguchi for the purpose of creating a slim TCP of high-definition and multi-output to connect an LCD of high-definition and a large amount of pixels to a driving means for driving an LCD module [Taguchi, Col. 6, Lines 55-59].

Chen does not appear to have a pad part divided having a desired width of a slit inbetween; however, Taguchi does have an aperture region of a width to accommodate an LSI chip [Col. 6, Lines 56-57]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chen in view of Taguchi such that a pad part would have an appropriate width for appropriate connection to a given chip or other electrical devices. Note also that Taguchi has a stress-reducing portion in a base film and specifies that the width of the cut-out portion must not be less than 0.3mm [Col. 7, Lines 20-23 and Col. 7, Lines 40-42].

Taguchi has an aperture region mounted with an LSI chip. Chen does not appear to have a part of a base film removed; however, Taguchi does have a portion of the base film removed to define the aperture region. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chen in view of Taguchi to remove a part of the base film for necessary connections.

Taguchi has an aperture region in the base film at the center of the base film which, once connected, would oppose the LCD panel [Figure 1(a)].

Chen does not appear to have a TCP bonded in a bent state between an LCD and PCB; however, bonding and bending a PCB via TAB or TCP into a bent state is common in the art. For example, Terao et al. has an elastic member that aids in pressing the PCB in a bent state [Figure 3] against an LCD.

Chen has output pads of ICs bonded in a plane state to the flexible base film and a flexible PCB is included in the flexible base film [Col. 4, Lines 14-16].

Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (USPN 6,456,353 B1) in view of Taguchi (USPN 5,949,512).

Per claims 7-10:

7. A liquid crystal display wherein a tape carrier package is bonded onto a liquid crystal display panel, comprising: a pad part being provided with a plurality of pads and divided into at least two parts; and a substrate provided with pads of a driving wire to which pads of the tape carrier package is bonded, said tape carrier package being bonded onto the substrate.
8. The liquid crystal display according to claim 7, wherein the pad part is divided with having a desired width of slit therebetween.
9. The liquid crystal display according to claim 7, further comprising: a printed circuit board mounted with circuits generating driving signals for driving the liquid crystal display panel and to which an input pad of the tape carrier package is connected.
10. The liquid crystal display according to claim 7, further comprising: a backlight unit being installed under the substrate to irradiate a light onto the liquid crystal display panel.

Discussion: A pad part having a plurality of pads and divided into at least two parts has been previously addressed *supra*. Chen has a flexible base film that has wiring therein and thereon [Col. 2, Lines 58-59]. The driver ICs are connected to the flexible base film via TAB, for example [Col. 3, Lines 64-67 and Col. 4, Line 1]. It would have been obvious to one of ordinary skill in the art in light of Chen and Taguchi to modify Chen such that pads of a TCP could electrically connect with wiring on a substrate comprising a base film for the purpose of simplifying manufacturing, reducing production cost, reducing overall size, thickness, and weight of an LCD [Chen, Col. 2, Lines 51-54] and furthermore reduce the number of PCBs. A pad part of a desired width has previously been addressed *supra*. A printed circuit board to which an input pad of the TCP is connected has been previously addressed with respect to Terao et al. *supra*. With respect to the backlight unit, Chen has a “backlight ... located under the liquid crystal panel to form the liquid crystal module [Col. 3, Lines 12-13].” Also, Applicant’s admitted prior art [Figures 1 and 2, Specification Changes / Marked-Up Version / Attachment] states that a backlight [4] is installed under the lower glass substrate [3] of the LCD panel [2] to irradiate light onto the LCD panel [2].

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (USPN 6,362,866 B1) in view of Taguchi (USPN 5,949,512).

Per claim 11:

11. A method of compensating a misalignment between pads

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of a liquid crystal display panel to which a tape carrier package is bonded, said method comprising the steps of: dividing a pad part of the tape carrier package into at least two parts so as to reduce a thermal expansion occurring at the pad part of the tape carrier package upon bonding of the liquid crystal display panel to the tape carrier package; and bonding the tape carrier package having the divided pad parts onto a substrate of the liquid crystal display panel.

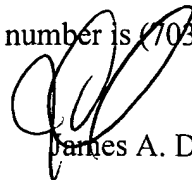
Discussion: Yamazaki et al. does not have a method of dividing a pad part into at least two parts to reduce thermal expansion occurring at the TCP pad part upon bonding of an LCD panel to the TCP; however, Taguchi does have a base film having an aperture region as previously noted. Yamazaki et al. has an electrode pad with a variable shape. The electrode pad has a shrinkage width so that shifts in adhering the pad to a substrate for electrical connection can be compensated for upon bonding [See Col. 6, Lines 42-52]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yamazaki et al. in view of Taguchi to have a pad portion divided into at least two regions for accuracy in connections [Yamazaki et al. ABS.].

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (703)305-7009. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (703)305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703)746-8741 for regular communications and (703)746-8741 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Jeanne Andrea Di Grazio



James A. Dudek, Primary Examiner

JDG

November 8, 2002